A Review of the Hawaiian Species of Idolothripinae (Phlaeothripidae: Thysanoptera)

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Published knowledge of the Hawaiian tubuliferous thrips fauna is meager. This is largely due to the limited extent to which our findings have been reported in the past. Those accumulated findings are being jointly reported in this paper and in others to follow. The primary objective of these papers is to assemble all the information on these thrips together in a ready reference available for local use. All the Hawaiian literatures will be completely cited. Recent innovations in the systematics of the suborder Tubulifera, specifically the two major contributions by Mound (1974a, b) on the Pacific Idolothripinae, provided impetus to the study of the Hawaiian species.

The last review of the Hawaiian Thysanoptera (Zimmerman 1948) is in need of extensive clarifications and additions. It listed only six idolothripine species. In the present review, one synonymy and two nomenclatural changes are reported, and four more species, including one new to science, are added. A new idolothripine species described subsequent to the last review was found to have been misplaced in this subfamily. Among nine species listed here, only three are considered endemic to the Hawaiian Islands.

Materials accumulated in the Sakimura Collection and the Bishop Museum Collection are all pooled in this work. The Bianchi Collection, which included the HSPA Collection and the Hawaiian Entomological Society Collection, is now deposited in the Bernice P. Bishop Museum. In our listings of "Material Studied" and "Earlier Collection Recorded", specimens from the Sakimura Collection are all specified by his accession numbers, and those from the Bishop Museum Collection are marked with an asterisk. The absence of a collector's name preceding either accession number or asterisk indicates that such specimens were collected either by K. Sakimura or by F. A. Bianchi, as the case may be. A few other entries with R. C. L. Perkins accession numbers were similarly handled. The scanty representation of some species from islands other than Oahu is likely due to the relative infrequency of collecting done away from Oahu, where both of us reside.

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Subfamily **IDOLOTHRIPINAE** (=Megathripinae)

The Species of this subfamily ingest the fungal spores growing among leaf litter, dead or live foliage, or dead wood. They are principally characterized by a pair of very broad maxillary stylets, used for grasping and swallowing

spores, which are not accompanied by maxillary guide (Figs. 1a, 2a, 3a, 4a, 5a). In contrast, the species of the subfamily Phlaeothripinae have a pair of fine wire-like maxillary stylets, used for piercing and sucking fungal hyphae or others, which are usually accompanied by a maxillary guide (Fig. 5h). The Idolothripinae is also characterized by the males lacking a glandular area on abdominal sternite VIII, and also without a shortening and thickening of the seta ii of tergite IX. The species of the tribe Cryptothripini have only one pair of the sigmoid wing-retaining setae on tergites II-VII. Arrangements of the maxillary stylets retracted in the head capsule are diverse and provide the criteria for the generic segregations.

Priesner (1960) recognized five tribes in the subfamily, Compsothripini, with four subtribes, Idolothripini with five subtribes, Pygidiothripini, and Pygothripini. Stannard (1968:531) dismissed the Pygidiothripini, and Mound (1974a:6) recognized only the first three tribes. In the Hawaiian fauna, only the Cryptothripini is represented.

Check List of Species Discussed in this Paper

(Synonymous species names listed are limited to those that have appeared in the Hawaiian literatures)

Family **Phlaeothripidae**
Subfamily Idolothripinae:
Tribe Cryptothripini:
Subtribe Diceratothripina:
Dichaetothrips brevicornis (Bagnall, 1910)
Dichaetothrips setidens (Moulton, 1928)
Scotothrips claripennis (Moulton, 1934)
Dichaetothrips claripennis Moulton, 1934
Subtribe Gastrothripina:
Dermothrips hawaiiensis Bagnall, 1910
Gastrothrips acuticornis (Hood, 1925)
Hoplothrips paumalui Moulton, 1937, syn. n.
Nesothrips brevicollis (Bagnall, 1914)
Nesothrips oahuensis Kirkaldy, 1907
Oedemothrips laticeps Bagnall, 1910
Rhaebothrips lativentris Karny, 1913
Rhaebothrips major: Bianchi, 1945 (not Bagnall, 1928)
Subtribe Allothripina:
Allopisothrips alakaiensis Sakimura & Bianchi, gen. et sp. n.
Allothrips brasilianus Hood, 1955

Subfamily Phlaeothripinae:
Tribe Haplothripini:
Apterygothrips remotus (Bianchi, 1947), comb. n.
Pseudocryptothrips remotus Bianchi, 1947 (allothripine genus)

Key to the Hawaiian Species of Idolothripinae

1. Eye reduced, with few large, variably-sized facets; maxillary stylets retracted in a long U-shape (reaching eye); antenna 7-segmented ..... (2)

Eye normal, with many small, uniformly-sized facets; maxillary stylets retracted in a medium (reaching about half height of occiput) to long (nearly reaching eye) V-shape; antenna 8-segmented ..... (3)

2. Meso- and metanota partly fused (Fig. 1h); praepectus and mesopraesternum absent; antennal segment VII sessile, broadly joined to VI; major setae pointed .....
..... *Allopisothrips alakaiensis* Sakimura & Bianchi, gen. et sp. n.

Meso- and metanota not fused at all (Fig. 2b); praepectus and severely degenerated mesopraesternum present; antennal segment VII pedicellate, narrowly joined to VI; all major setae expanded at apex
.....*Allothrips brasilianus* Hood

3. Antennal segment IV with 2 or 3 sense cones..... (4)

Antennal segment IV with 4 or 5 sense cones..... (5)

4. Antennal segment VIII stout and cone-shaped, VII sensile but VI pedicellate, IV with 2 sense cones; head abruptly constricted subbasally; body heavily sclerotized and roughened, strongly corrugate-reticulate ..... *Dermothrips hawaiiensis* Bagnall

Antennal segment VIII slender and spindle-shaped, VII pedicellate, IV with 3 sense cones; head not constricted subbasally; body lightly sclerotized, generally devoid of any conspicuous sculpture .....
..... *Gastrothrips acuticornis* (Hood)

5. Head 1.5 times or more as long as wide*, not or slightly narrowed basally ..... (6)

Head 1.4 times or less as long as wide*, distinctively narrowed toward base; antennal segment IV with 4 sense cones..... (7)

6. Ocellar setae behind posterior ocelli and widely separated, another ocellar setae before posterior ocelli; head about 1.8 times as long as wide; antennal segment III about 2.8 times as long as wide, IV with 5 sense cones; ♀ with fore tarsal tooth .....
..... *Dichaetothrips brevicornis* (Bagnall)

Ocellar setae practically between posterior ocelli and close together, no large seta before posterior ocelli; head about 1.5 times as long as wide; antennal segment III about 3.5-3.8 times as long as wide, IV with 4 sense cones; ♀ without fore tarsal tooth .....
..... *Rhaebothrips lativentris* Karny

7. Head about 1.3 times as long as wide; tube about 2.9 times as long as wide at base; ♀ with fore tarsal tooth .....
..... *Scotothrips claripennis* (Moulton)

Head about 0.9-1.0 times as long as wide; tube about 1.5-1.9 times as long as wide at base; ♀ without fore tarsal tooth ..... (8)

8. Eye much distended caudad on venter; antennal segments I-III dark brown; mesopraesternum absent; pronotal epimeral seta much smaller than posteroangular seta; seta ii (counting from meson) of tergite IX reduced to a minor seta in both sexes .....
.....*Nesothrips oahuensis* Kirkaldy

Eye scarcely distended caudad on venter; antennal segments I-III brownish yellow; mesopraesternum present; pronotal posteroangular seta much smaller than epimeral seta particularly in ; seta ii of tergite

*Measuring of both length and width should be done on specimens which are not distorted by the pressure of the cover slip.

IX a major seta and much larger than seta i .....
..... *Nesothrips brevicollis* (Bagnall)

ALLOPISOTHRIPS Sakimura and Bianchi, new genus (Figs. 1a-i).

Type-species: Allopisothrips alakaiensis Sakimura and Bianchi, new species

Diagnosis: Allothripina, apterous; eye with few irregularly-sized facets only; 7-segmented antenna with conic VII; maxillary stylets retracted far into head capsule, U-shaped; meso-metanota as well as meso-metasterna fused with each other, mesopraesternum absent, fore margin of mesosternum moderately eroded, but not gapped mesiad; mid-hind tarsi 2-segmented; pelta broad, flattened triangular, sculptured; tube short.

Description: Body devoid of sculpture. Head (Fig. 1a) 1.1 times as long as wide, front distinctly produced beyond eyes, cheek convex, no constriction below eye, base as wide as width at eyes, basal collar thickened. Eye in apterous form strongly degenerated, 7 facets on dorsum and about 3 to 4 on venter, irregular in sizes; ocelli absent; postocular and dorsal setae very long and fine, ocellar setae somewhat shorter, all the other setae on head minute. Antenna (Fig. 1g) short and stout, 1.8 times as long as head, 7-segmented, shape of segments and sense cones as illustrated; VII conic with small basal constriction, basal width decidedly narrower than apical width of VI, both V-VI ventrally distended at apex near inner corner, several setae concentrated on venter of VII as well as near ventral distentions of V-VI; III-IV with 2 stubby sense cones each; II with apical margin of sclerotized portion sagged mesiad and areola located within membranous area. Mouth cone moderately long and broadly rounded at apex; maxillary stylets (Fig. 1a) broad and heavy, retracted in U-shape well separating from each other and reaching as high as beyond hind margin of eyes. Pronotum (Fig. 1a) 0.8 times as long and 1.6 times as wide as head, all major setae well developed and fine, epimeral suture complete, praepectus absent. Pterothorax nearly as wide as prothorax, but nearly 0.5 times as long as its own width, strongly degenerated, apterous; meso-metanota (Fig. 1h) partly fused with each other, fore and hind margins strongly eroded, mesonotal acrotergite misshaped; meso-metasterna (Fig. 1f) fused with each other, fore margin moderately eroded, but not gapped mesiad; mesopraesternum completely disappeared but misshaped prospinasternum still present; all legs short and stout, fore tarsal tooth in ♂ (Fig. 1c), mid-hind tarsi 2-segmented. Pelta (Fig. 1b) very broad, strongly flattened, transversely striate except over a small area at apex; chaetotaxy on tergite and sternite IV illustrated (Figs. 1e, 1i), major setae on all abdominal segments very long and fine. Tube (Fig. 1d) short and stout, 0.5 times as long as head, 1.25 times as long as its basal width, sides weakly concave, major setae on tergite IX and tube all far longer than tube.

Relationships: Among the allothripine genera which all have reduced eyes, further degeneration occurs in the antennal segmentation and also in the fusion of the nota-sterna of pterothorax. The most degenerate group includes *Allopisothrips, Parallothrips* Hood, *Priesneriella* Hood, and *Pygidiothrips* Hood. In these genera, meso-metanota as well as meso-

metasterna are fused with each other, and mesopraesternum is completely absent. The first two genera belong to a group with 7-segmented antenna. Three other genera with 7-segmented antenna have unfused meso-meta nota and sterna. The remaining two genera, *Priesneriella* and *Pygidiothrips,* belong to another group with 6-segmented antenna. Four other genera of the subtribe Allothripina belong to a third group with 8-segmented antenna. None of these have fused meso-meta nota and sterna. The closest ally of *Allopisothrips* is *Parallothrips* which has many similarities but is readily separable by the non-segmented mid-hind tarsi, misshaped mesosternum with a large gap mesiad, and different shape of pelta. Other genera in the group with 7-segmented antenna are *Allidothrips* zur Strassen, *Allothrips* Hood, and *Diopsothrips* Hood. Besides the difference in the unfused meso-meta nota and sterna, *Allidothrips* differs from *Allopisothrips* by the fully developed abdominal tergite I; *Allothrips,* by the pedicellate antennal segment VII and shape of pelta; and *Diopsothrips,* by the pedicellate antennal segment VII and the long tube which is ridged.

Allopisothrips alakaiensis Sakimura and Bianchi, new species (Figs. 1a-i).

Male, apterous (holotype): Partly described under the genus; uniformly dark grayish brown, antenna lighter and abdomen darker after NaOH treatment, major setae dark grayish brown. Body devoid of any sculpture, except over pelta. Body 1570 (in microns; unless otherwise stated denotes length only; w. = width); head (Fig. 1a) 170, w. 150 on cheeks, setae: ocellar 60, both postocular and dorsal 100. Antenna (Fig. 1g) 192, length(width) of segments: 42 (38), 49(33), 46(36), 37(39), 37(35), 44(37), 45(29), an incomplete suture faintly traceable on right VII of holotype, setae on all segments moderately long and fine. Pronotum (Fig. 1a) 136, w. 230, setae: anteromarginal 60, anteroangular 44, midlateral 90, epimeral 90, posteroangular 80. Pterothorax 110, w. 250, metanotal median seta 36, hind tibia 125. Abdomen 1060, w. 330 on III; tube (Fig. 1d) 82, w. 69 at base, 37 at apex; setae: IXi-ii both 165, IXiii 128, terminal 130.

Female: Unknown.

Holotype (Bishop, Type No. 11039): KAUAI: 1♂, Alakai Swamp trail, 1270 m, beating dead branches on bog floor, 24.VII.1953 (Saki 3828b).

Discussion: This species, which is apparently a highland dweller in wetter habitats, is considered probably endemic in the Hawaiian Islands.

Allothrips brasilianus Hood (Figs. 1j-k, 2a-i).

Allothrips brasilianus Hood, 1955:101, fig.; Mound, 1972:27.

Diagnosis: This species was described by Hood (1955) from a unique apterous female, and reviewed by Mound (1972). Brief diagnosis with supplemental descriptions and illustrations of both sexes, and their measurements is as follows: Small bicolorous species, 1.4-2.1 mm long; head and tube yellow, apical 1/4 of head brown-washed, apical 1/6 of tube grayish brown; the rest grayish brown, abdomen darker and pterothorax lighter than prothorax, distal abdominal segments progressively darker toward VIII, IX distinctly lighter, sometimes yellowish with brown-wash at

distral 1/3; antennal I, IV-VII dark grayish brown, I basally pale, IV sometimes lighter toward base, II-III brownish yellow; all legs yellow, all femora brown-washed along outer margin, all coxae grayish brown; all major setae pale to yellow, expanded at apex; sculpture weak, as illustrated.

Usually apterous, rarely brachypterous. Head (Figs. 2a, h) 1.2-1.3 times as long as wide in both sexes and both forms, front weakly produced, cheek distinctly rounded, basal collar thickened; eye reduced; in apterous form with 2 large and 4 small facets only, ocelli lacking; in brachypterous form with 3 large and about 21 small facets on dorsum, about 13 more small facets on venter, ocelli present; postocular, postocular-cheek, interocular setae always expanded at apex; mid-dorsal setae immediately below (ranging 0-12 μ away) the connecting line between the bases of 2 postocular setae, size variable from minute or expanded subminute to expanded major seta, unmatched pair rather common, ♂♂ often with a pair of expanded major setae, ♀♀ often with a pair of minute setae.

Antenna (Fig. 2e) 1.7-1.9 times as long as head in both sexes, 7-segmented, segments stout, VII distinctly pedicellate, IV-VI ventrally distended at apex, more so in ♂♂, III about 1.7 times as long as wide, II with a pair of expanded setae on both sides of areola, sense cones as illustrated; maxillary stylets broad and heavy, retracted in a U-shape reaching slightly beyond the hind margin of eyes. Pronotum (Fig. 2a) about 0.6 times as long as head in all forms, all major setae expanded at apex, posteromedian setae minute, anomalous second epimeral seta rather common either on one side only or on both sides, more frequent in ♀♀. Pterothorax about 0.7 (apterous) and 1.0 (brachypterous) times as long as head; mesonotum (Figs. 2b, i) in apterous form with 3 pairs of expanded setae at sides and minute posteromedian setae; in brachypterous form with 1 pair only of sublateral expanded setae; in thoracic sterna (Fig. 2c) praepectus small, mesopraesternum degenerated to 2 small pieces at sides; wing pad (brachypterous) with subbasal setae all expanded, arranged at angle; fore femur (Fig. 1j) about 0.7 (♀, gynaecoid ♂) and 0.8 (oedymerous ♂) times as long as head; in oedymerous ♂ fore femur hardly incrassate but fore tibia shortened and tarsal tooth large (Fig. 2f); in gynaecoid ♂ fore tibia not shortened and tarsal tooth tiny. Abdomen, pelta (Fig. 1k) very broad, as illustrated; in apterous form tergites III-IX (Fig. 2g) with 3 pairs each of major tergal setae expanded at apex, except seta iii (counting from meson) on VII-IX acute at apex; tube (Fig. 2d) short, 1.5-1.7 times as long as wide at base, 0.5-0.6 times as long as head, thick-walled; major setae of tergite IX (Fig. 2d) 0.5-0.7 times as long as tube, outer pair of terminal setae longer than tube, inner pair much shorter.

Measurements: (in microns; unless otherwise stated denotes length only; w. = width). *Males* (range among 5 oedymerous- and 5 gynaecoid-apterous cases): Body 1400-1590; head 169-203, w. 138-148, setae: interocular 25-37, postocular 35-53, postocular-cheek 23-32, mid-dorsal 4-37; antenna 306-351, length (width) of segments: 40-45(38-42), 48-57(32-34), 49-57(30-34), 40-49(30-32), 35-44(29-31), 36-42(27-28), 52-61(25-26); pronotum 106-119 (oed.) and 100-114 (gyn.), w. 188-200 (oed.) and 180-203 (gyn.), setae: anteromarginal and anteroangular 26-40, midlateral 27-37, epimeral and

posteroangular 30-40; mesonotum, 3 pairs of lateral setae 23-40; fore femur 133-148 (oed.) and 117-130 (gyn.), fore tarsal tooth 15-18 (oed.) and 2-3 (gyn.); hind tibia 122-158; abdomen 900-1050; tube 86-99, w. 54-59 (base) and 27-30 (apex); tergite IX, setae: i (counting from meson) 50-62, ii 64-69, iii 86-107; longest terminal seta 120-133.

Females (range among 12 apterous and 2 brachypterous cases): Body 1800-2080; head 185-217, w. 160-175, setae: interocular 31-42, postocular 47-53, postocular-cheek 26-37, mid-dorsal 4-25; antenna 326-373; pronotum 110-130, w. 203-240, setae: anteromarginal and anteroangular 27-45, midlateral 31-44, epimeral and posteroangular 31-49; pterothorax 140-160 (apt.) and 200-205 (brachypt.); mesonotum, lateral setae 27-43; hind tibia 138-163; wing pad (brachypt.) 150-160; abdomen 1190-1470; tube 108-124, w. 69-78 (base) and 31-37 (apex); tergite IX, setae: i 54-74, ii 72-82, iii 88-114; longest terminal seta 141-169.

Material studied: OAHU: 24♀♀, 15♂♂, 1 larva, Barber's Point, Berlese extractions of periodic litter samples of *Pluchea odorata,* III-IV.1955, XII.1955-IV.1956, I. 1959*; 29♀♀, 3♂♂, 1 larva, Barber's Point, beatings of dead branches of *Prosopis pallida,* 7.IX.1964 (Saki 4253a); 1♀, St. Louis Heights, 230 m, beatings dead branches,13.IX.1964 (Saki 4268b). MOLOKAI: 2♀♀, 1♂, Maunaloa, 460 m, beatings dried grass and dead branches of *Lantana camara,* 13.IX.1964 (Saki 4266b).

Discussion: The key character Mound (1972) used to recognize this species is the position of the cephalic mid-dorsal setae, which are unique among the congeners. As stated in the diagnosis, these setae are variable in size and often so minute in females that it is difficult to find them. Their position is, however, quite stable. This fact should be taken into account when using Mound's key. It is interesting to note that on the unique holotype female the same setae are minute on one side, but developed and expanded at apex on the other side (Hood 1955:fig. 170).

The type specimen of *A. brasilianus* was collected near Rio de Janeiro in 1948. In 1955, the second collection was made in Hawaii where it was apparently introduced from somewhere and well naturalized for some time. It is difficult to account for this disjunct distribution, and it is reasonable to expect other populations to be discovered between the two presently known localities. *A. brasilianus* is a lowland species which breeds among leaf litter or dead branches. It is not a rare species in its preferred habitats.

Dermothrips hawaiiensis Bagnall (Figs. 2j-p, 3a-h).

Dermothrips hawaiiensis Bagnall, 1910:677, figs.; Moulton, 1928a:117; Zimmerman, 1948:435; Mound, 1968:77.

The original description (Bagnall 1910) of this endemic species, the type species of its monotypic genus, is inadequate, ambiguous, and even misleading in some aspects. During the past 67 years the species was studied only once by Mound (1968), who had an access to the lectotype but published only a brief generic diagnosis. The species is fully redescribed and illustrated as follows:

Female (apterous): Color: Blackish brown, abdomen darker than the rest, tergite IX lighter than VIII, tube darkest but both extremes narrowly

light grayish brown, antennal III with pedicel brownish yellow, all legs with both extremes of femora as well as tibiae narrowly and all tarsi totally light grayish brown, all major setae pale.

Sculptural: Body heavily sclerotized and roughened, strongly corrugate-reticulate (surface within reticulum heightened) or rugrose, warty. Head (Fig. 3a) with vertex reticulate-rugrose, occiput transversely reticulate and warty at the bases of all setae, collar hexagonally reticulate; antennal segments (Fig. 3b) transversely reticulate; pronotum (Fig. 3a) sub-hexagonally reticulate in a concentric pattern on both right and left halves, transversely reticulate along hind margin, sculpture weak specifically in oedymerous ♂; mesonotum finely and transversely reticulate, with many small warty cusps; metanotum hexagonally reticulate; leg (Fig. 2j) with fore coxae sub-hexagonally reticulate, all femora and distal 1/2 to 2/3 of all tibiae transversely reticulate, the remainder of all tibiae hexagonally reticulate, all tarsi devoid of sculpture; abdomen, pelta (Fig. 2n) sub-hexagonally reticulate except at apex, with a broad dark-colored ridge completely across transversely at 1/3 height from hind margin; tergites II-IX with narrow anterior band before antecosta (no antecosta on IX) devoid of sculpture, middle broader band below antecosta finely and hexagonally reticulate, with many small warty cusps in both lateral areas, posterior band covering 1/3 height before hind margin weakly and transversely reticulate, with many small warty cusps and bearing all major tergal setae; tube (Fig. 3e) finely and hexagonally reticulate, visible only on bleached specimens.

Structural: Body 2940-3280 (range among 3 ♀♀; all measurements in microns; unless otherwise stated denotes length only, w. = width); all major setae acute at apex, arising from prominent warts, generally short. Head (Fig. 3a) 296-337, w. 247-265, 1.2-1.3 times as long as wide; front slightly produced beyond eyes, vertex with a long furrowed process, broad sunken mesial trough extending from slightly behind the level of ocellar setae to the apex of interantennal carina, cheeks nearly parallel, rugose and warty, subbasal collar broad, very acutely and strongly constricted, hind margin additionally thickened; eye 69-82, w. 54-59, interval 107-125 between eyes, rather small, not extended posteriad on venter; ocelli absent; all setae shorter than about 1/6 of head length, postocular near inner posterior angle of eye, 43-64, ocellar 31-32, mid-dorsal 28-41, variable, about 9 small peg-like setae arising from highly prominent warts along cheek, about 15 long; mouth cone short, broadly rounded, maxillary stylets broad, retracted in V-shape, reaching nearly to postocular setae. Antenna (Fig. 3b) 492-546, 1.6-1.8 times as long as head; length(width) of segments: 64-69(51-54), 75-82(43-47), 86-102(39-43), 65-74(41-43), 71-82(41-42), 65-78(38-41), 33-39(26-33), 25-29(13-19); II with pedicel sharply angled, III (Figs. 3c-d) 2.0-2.6 times as long as wide, variable, IV-VI pedicelate, VI-VIII broadly joined together; sense cones slender and long, III-IV 2 each, V 2 long and 1 small, VI 1 long and 1 small, VII 1, as illustrated.

Pronotum (Fig. 3a) 186-209, w. 288-319, about 0.6 times as long as head; fore margin additionally thickened, longitudinal median apodeme weak, epimeral suture complete; setae short, anteromarginal 28-31, anteroangular 20-31, midlateral 18-38, variable, posteroangular 36-38, epimeral minute, in

an anomalous case, posteroangular reduced and epimeral enlarged, posteromedian 15-31, variable, fore coxa with several small peg-like setae, 1 of them slightly thicker and longer, 10-13; praepectus present and prospinasternum very small (Fig. 2p). Pterothorax 237-260, w. 377-428 at shoulders; all setae on meso- and metanota reduced except metanotal median pair, 18-41, variable; mesopraesternum (Fig. 2p) depressed triangular in shape, unusually narrow; honeycomb-sculptured area surrounding meso- and metathoracic spiracles large. Fore femur 217-237, about 0.7 times as long as head, fore tibia and tarsus together 237-280, longer than femur, fore tarsus unarmed; hind tibia 260-300. Abdomen 2040-2250; pelta (Fig. 2n) large, slightly narrower than the full width of tergite II; tergites III-VIII with lateral and sublateral setae all short, ranging of 25-56, inconspicuous. Tube (Fig. 3e) 232-250, w. 89-94 at base, 43-47 at apex, 2.5-2.7 times as long as wide at base, 0.7-0.8 times as long as head, slender and long, profile of tube somewhat variable, distral 1/5 gradually narrowed toward apex in every case, basal 4/5 slightly variable from practically straight (Fig. 3e) to slightly narrowed at basal 1/3 or also slightly swollen at second 1/3 (Fig. 3f); tergite IX with setae not exceeding 1/3 length of tube, setae i (counting from meson) 58-69, ii 74-77, iii 74-82, longest terminal seta 117-148, about 1/2 as long as tube.

Male (apterous): Color and sculpture as in ♀. Body 2600-2980 (range among 2 oedymerous ♂), 2210-2470 (range among 4 gynaecoid ♂); head 242-278, w. 212-242, 1.1-1.2 times as long as wide (oed.), 240-270, w. 196-214, 1.2-1.3 times as long as wide (gyn.); setae (in both forms): postocular 37-56, ocellar 15-33, variable, mid-dorsal 26-37. Antenna 458-525, 1.9-1.9 (oed.) times and 416-457, 1.7-1.9 (gyn.) times as long as head, III 2.0-2.4 (oed.) and 1.8-2.1 (gyn.) times as long as wide, variable. Pronotum 199-240, 0.8-0.9 times as long as head, w. 288-380 (oed.) (Fig. 2m), 153-176, 0.6-0.7 times as long as head, w. 235-265 (gyn.); setae (in both forms): anteromarginal 13-31, anteroangular 23-46, midlateral 15-58, variable, posteroangular 28-58, epimeral minute, posteromedian 14-25, fore coxal peg-like setae 18-23 (oed.), 8-13 (gyn.); longitudinal median apodeme well developed in both forms. Pterothrorax 217-260, w. 367-430 (oed.), 194-217, w. 286-340 (gyn.); fore leg (Fig. 2j): femur 280-380, about 0.8 times as long as head strongly thickened and elongate (oed.), 180-194, about 0.7 times as long as head (gyn.); tibia and tarsus together 180-250, considerably shorter than femur (oed.), 204-222, longer than femur (gym.); tarsus with recurved tooth, large, 36-58 (oed.), small, 14-18 (gyn.) (Fig. 2k); hind tibia 220-240 (oed.), 190-220 (gyn.). Abdomen 1670-1950 (oed.), 1500-1670 (gyn.); pelta as in ♀; tube (in both forms) 173-224, w. 71-94 at base, 36-49 at apex, 2.3-2.5 times as long as wide at base, 0.7-0.8 times as long as head; curvaceous profile strongly accentuated in oedymerous ♂ (Fig. 3h), strongly narrowed at subbasal level, and considerably swollen near middle, then gradually tapered towards apex; profile of gynaecoid ♂ less curvaceous (Fig. 3g); ventral sheath formation of sternite IX for supporting tube powerfully developed; setae (in both forms): tergite IX setae i 46-60, ii 58-87, iii 60-97, longest terminal seta 110-128.

Material studied: KAUAI: 2♀♀, Lihue, 19.III.1928, O. H. Swezey*; 5♀♀, 3♂♂, Kokee, 1230 m, Kaunuohua Ridge, Kokee, 1400 m, 17, 19, 22.VII.1937, E. C. Zimmerman*; 8♀♀, 13♂♂, Kaunuohua Ridge, Kokee, 1370 m, Kumuweia Ridge, Kokee, 1230 m, Alakai Swamp Trail, Kokee, 1270-1300 m, Kokee, 1070 m, dead branches, *Plantago lanceolata* flowers, 23, 24.VII.1955 (Saki 3809, 3817, 3824, 3825, 3829, 3830, 3833).

OAHU: 1♀, Mt. Palikea, 1030 m, 11.XI.1936, Zimmerman*; 2♀♀, Mt. Kaala, 1000 m, *Acacia koa* flowers and dead branches, 17.IV.1946*; 1♀, Halawa Trail, 530 m, dead branches, 2.III.1947 (Saki 2180); 13♀♀, 2♂♂, Mt. Palikea, 930-1000 m, dead branches, *Urera sandvicensis,* 30.V.1947 (Saki 2218, 2226, 2229, 2233); 52♀♀, 32♂♂, Mauna Kapu, 930 m, Mt. Pilikea, 1000 m, dead branches, *U. sandvicensis, Pelea* sp., 6.VI. 1947 (Saki 2234, 2236, 2238, 2240 2242, 2244, 2249, 2250, 2256); 1♀, 1♂ Kulepiamoa Ridge Trail, Niu, 430 m, *Pelea* sp., 22.VI.1947 (Saki 2263); 5♀♀ Mokuleia Trail, 670-770 m, dead branches, *Pelea* sp., 13.VII.1947 (Saki 2269, 2273, 2277); 22♀♀, 8♂♂, Mt. Palikea, 930-1030 m, dead branches, *U. sandvicensis,* 12.I1948 (Saki 2298, 2299, 2305).

MAUI: 2♀♀, 2♂♂, Olinda, 1190 m, 1.IV. 1932, O. Bryant*; 3♀♀, 1♂, Puu Luau, Haleakala, 1830 m, 27, 28.IV.1945, Zimmerman* (Saki 1681, 1688).

HAWAII: 3♀♀, Kilauea, 1300 m, 27.VI.1917, Swezey*; 1♀, Kipuka Puaulu, Kilauea, 1300 m, 11.X.1945, C. J. Davis*; 8♀♀, 5♂♂, Kilauea region, 2200 m, *Acacia koa,* 8.VIII, 26.XII.1971, 26.II, 14.VIII, XII.1972, W. C. Gagne (Saki 4963, 4966, 5004, 5041, 5087).

Earlier collections recorded: KAUAI: 8♀♀, Waimea Mts., 830 m, 1200 m, 1330 m., VI.1894, IV. 1895, II.1897, R. C. L. Perkins (No. 285, 523); 1♂, no locality given, 1330 m, X.1895, Perkins (No. 560) (Bagnall 1910). OAHU: 1♀ (macropterous), Waianae Mts., 670 m, IV.1892, Perkins (No. 14); 3♀♀ (macropterous), near Honolulu, 770 m, back of Mt. Tantalus, 630 m, VII, XI.1900, Perkins (No. 667, 784, 786) (Bagnall 1910); 1, Waianae Mts., 660 m, dead trees, 6.II.1927, Swezey (Moulton No. 1815) (Moulton 1928a). MAUI: 3♀♀ (including the lectotype), Haleakala, over 1670 m, X.1896, Perkins (No. 636) (Bagnall 1910); 1♀, Olinda, 1270 m, *Myrsine* sp., 14.VI.1927, Swezey (Moulton No. 2545) (Moulton 1928a). HAWAII: 3♀♀, Kona, 670 m, 1000 m, IX.1892, Perkins (No. 203, 206); 8♀♀, Kilauea, 1330 m, VII, VIII.1895, VIII, IX.1896, Perkins (No. 531, 532, 603, 656) (Bagnall 1910).

Discussion: The Hawaiian *Dermothrips* is a distinctive genus in Cryptothripini, being only remotely related to its nearest ally, the Australian *Emprosthiothrips* Moulton, as Mound (1968:182, 1974a:50) pointed out. The two genera are alike in having the strongly sculptured head with the warty cheeks and strongly constricted collar, and the angled antennal segment II, which are all rare in the tribe. In *Dermothrips*, however, the head is not as strongly produced in front of eyes, and the body setae are not as strongly reduced as in *Emprosthiothrips. Dermothrips* shows further differences in the stout cheek setae, broadly joined antennal segments VI-VIII, long V-shaped maxillary stylets, complete epimeral suture, and small mesopraesternum.

Four macropterous females were collected by Perkins in 1892 and 1900, all on the island of Oahu. For some unknown reason, however, no subsequent collection on any island has turned up the macropterous form. Consequently, none was available for the present review. Two syntypes from Kilauea (Perkins No. 531, 532) in the USNM Collection were found to be apterous females. Mound (1968) designated an apterous female from Haleakala as the lectotype, but did not mention anything about the remaining paralectotypes in the BMNH Collection.

D. hawaiiensis, an endemic species, was collected from Kauai, Oahu, Maui, and Hawaii in the 1890's. It is a rather common and fairly abundant species in the wet highlands, breeding on dead branches of various trees. Strangely, however, none have been collected so far from *Metrosideros collina polymorpha* which is one of the commonest trees in the highlands.

Dichaetothrips brevicornis (Bagnall).

Diceratothrips brevicornis Bagnall, 1910:697, figs.; Moulton, 1936:187; Zimmerman, 1948:446; Mound, 1968:80, fig.
Dichaetothrips brevicornis: Mound, 1974a:46, fig.
Liothrips nigricornis Bagnall, 1921:278, figs.
Liothrips intrepidus Bagnall, 1921:279.
Liothrips thomasseti Bagnall, 1921:288; Mound, 1968:83, fig.
Mesothrips setidens Moulton, 1928a:129.
Dichaetothrips setidens: Moulton, 1944:308; Sakimura and Krauss, 1945:324; Zimmerman, 1948:447.
Cryptothrips niger Moulton and Steinweden, 1933:165, figs.
Ethirothrips madagascariensis Bagnall, 1936:222.

Diagnosis: This species was repeatedly described (Bagnall 1910, 1921, 1936, Moulton 1928a, Moulton and Steinweden 1933) and illustrated. A concise diagnosis was given by Mound (1974a). Brief diagnosis is as follows: Large dark grayish brown species, with fore tibia paler, extreme base of antennal III yellow, wing fumate, major setae dark and blunt or pointed at apex, sculpture weak, 4.3-5.6 mm long in both sexes, only macropterous ♀♂ seen in Hawaii; head (Mound 1974a:fig. 24) about 1.8 times as long as wide in both sexes, cheek straight and parallel-sided, postocular setae about 0.4 times as long as head, both ante- and postocellar setae well developed, less than 1/2 as long as postocular seta; very long maxillary stylets retracted in a V, reaching the level of postocular setae; antenna about 1.7 times as long as head, III 2.8-3.0 times as long as wide, IV with 5 sense cones; pronotum 0.4 (♀) and 0.5 (♂) times as long as head, all setae long; praepectus present, mesopraesternum only slightly degenerated; fore tarsal tooth in both sexes, fore femur incrassate in ♂; pelta (Mound 1968: fig. 26) large, hat shape, finely reticulate; tube 1.0-1.1 times as long as head, 3.8-3.9 times as long as wide at base, almost straight-sided; tergite IX with setae i-ii nearly as long as tube, iii slightly shorter.

Material studied: KAUAI: 1 , Puhi, on person, VIII.1956*. OAHU: 1 , Ewa coral plain, dead *Ricinus communis,* 15.III.1920, O. H. Swezey*; 1 , Halona valley, 330 m, *Pteraleyxia* sp., 7.V.1933, Swezey*; 7♀♀, Honolulu, on

person or *Blechnum* sp., 9.X.1940-24.I.1946, Swezey, F. X. Williams, Bianchi, J. S. Rosa, N. L. H. Krauss*; 1♂, Kunia, wind trap, 9.V.1944 (Saki 1646); 1♀, Palikea, 1030 m, dead branches, 12.I.1948 (Saki 2303); 1♀, Honolulu, under bark of *Araucaria heterophylla,* III.1950, W. Look (Saki 3655); 1♂, Mokuleia, corn, 18.XI.1953, Y. Tanada (Saki 3730); 1♀, Manoa, *Canavalia cathartica* flower, 8.IX.1955, W. W. Boyle (Saki 3924); 1♀, Halemano, 360 m, grass sweepings, 19.VII.1957 (Saki 4042); 1♀. Kaneohe, *Leucaena leucocephala* pod, 1.XII.1959, C. J. Davis*; 2♀♀, Honolulu, 230 m, on person, X.1958, IX. 1967 (Saki 4085, 4755); 1♂, Waimanalo, Macadamia tree, 13.IV.1963, C. W. Rutschky (Saki 4244). MAUI: 2♀♀, 1♂, Waihee, *Leucaena leucocephala* pods, 26.IV.1965*. HAWAII: 1♀. Hilo, reared from coconut frond, 18.V.1953, Davis*; 1♀, Kohala, *Leucaena leucocephala* pod, 12.VIII.1964*.

Earlier collections recorded: KAUAI: 3♂♂, Lihuė, dead branches of *Casuarina* sp.,dried fruits of *Psidium guajava,* 9,10.I.1944, Krauss (Saki No. 1592, 1593) (Sakimura & Krauss 1945). OAHU: 1♂, Kawailoa gulch, IV.1901, R. C. L. Perkins (No. 768) (holotype) (Bagnall 1910); 1♀, Manoa, 8.IV.1927, Williams (Moulton No. 1820) (holotype of *M. setidens)* (Moulton 1928); 1?♀, Manoa, under bark of *Osteomeles anthyllidifolia,* 24.IX.1929, Swezey (Moulton No. 3921) (Moulton 1936).

Discussion: D. brevicornis was first described (Bagnall 1910) from a single "female", which Mound (1968) later found to be a male, collected at Kawailoa, Oahu in 1901. Moulton (1928a), without comparing with Bagnall's species, erected *M. setidens* from a single female collected at Manoa in 1927. He (1936) also gave a supplemental description of *D. brevicornis.* Zimmerman (1948) listed both names but queried their validity. Mound (1974a) quite recently synonymized *M. setidens.*

D. brevicornis is widespread among many islands in the Indian and Pacific Oceans; namely Madagascar, Seychelles, Rodrigues, Faraulep Atoll, New Guinea, Queensland, New Caledonia, Fiji, Samoa, and the Marquesas. *D. brevicornis* is one of the six adventive idolothripine species known in Hawaii. *Allothrips brasilianus* has been discussed earlier. The four others to follow are *Gastrothrips acuticornis, Nesothrips brevicollis, Rhaebothrips lativentris,* and *Scotothrips claripennis.* These five species, excluding *A. brasilianus,* are all widely distributed on various islands or maritime regions of the Indian and Pacific Oceans, and Caribbean Sea. These fungus feeding thrips appear to have been readily transported by man through movement of infested leaf litter or dead wood, not only during the sailing ship era, but also during the modern steamer era, particularly prior to the advent of effective plant quarantine barriers. *D. brevicornis* appears to be the first of these species to reach here, probably arriving before the turn of the century.

D. brevicornis is not a common species in Hawaii, and has been collected sporadically over the past 75 years. This is a lowland species, living among dead twigs or within dried seed pods and fruits. It has been most often collected during dispersal flights.

Gastrothrips acuticornis (Hood) (Figs. 3i-n).

Cryptothrips acuticornis Hood, 1925:65.
Gastrothrips acuticornis: Hood, 1935:174, figs.; Mound, 1974a:53, figs.; 1974b:139.
Nesothrips acuticornis: Stannard, 1957:106; Ananthakrishnan, 1969:181; 1970:56; 1971:499, figs.; Jagadish and Ananthakrishnan, 1972:435, figs.
Cryptothrips cybele Girault, 1927:1.
Hoplothrips paumalui Moulton, 1937:412; Sakimura, 1937:420; Carter, 1939:271, 272; Zimmerman, 1948:439. New Synonymy.
Gastrothrips noumeae Bianchi, 1945a:251, fig.

Diagnosis: This species was described by Hood (1925) and Moulton (1937), and illustrated by Hood (1935), Mound (1974a), Ananthakrishnan (1971), and specifically larva II by Jagadish and Ananthakrishnan (1972). The species concept and variations were discussed by Mound (1974a, b). Brief diagnosis and supplemental illustrations are as follows: Dark grayish brown species with fore tibia and antennal III yellowish, wing clear, major setae pale brown and blunt or slightly swollen at apex, sculpture weak, 1.6-2.5 mm long, only macropterous and brachypterous ♀♀ and oedymerous- and gynaecoid-brachypterous ♂♂ seen in Hawaii; head (Mound 1974a: fig. 28) 1.0-1.1 times as long as wide in both sexes, cheek narrowed toward base, maxillary stylets retracted in a broad V, reaching about a half height of occiput; antenna (Mound 1974a:fig. 121) 2.1-2.2 times as long as head, III about 2.1 times as long as wide, IV with 3 sense cones, VIII slender spindle-shape, subequal or slightly shorter than VII; pronotum 0.6-0.7(♀) and 0.8-0.9(♂) times as long as head, setae all long; praepectus present, mesopraesternum only slightly degenerated; oedymerous ♂♂ (Hood 1935:fig. 3a, b) with larger pronotum (0.9 vs. 0.8 times as long as head), larger fore femur (1.5 vs. 1.3 times as long as head), larger tarsal tooth than gynaecoid ♂♂; mesothoracic shoulder spur (Fig. 3k) only in oedymerous ♂♂, postero-marginal flanges of metanotum (Figs. 3m, n) more extensive and deeper cut in oedymerous than gynaecoid ♂♂; pelta in the Hawaiian specimens (Fig. 3j) somewhat modified from that illustrated by Mound (1974a:fig 82); metanotum smooth; fore tarsus armed only in ♂; forewing with subbasal seta ii minute; tube (Fig. 3i) about 2.4 times as long as wide at base in both sexes, slightly shorter than head, straight-sided, tergite IX (Fig. 3i) with seta i shorter and seta ii longer than tube.

Material studied: OAHU: 2♀♀, Paumalu, 150 m, *Lantana camara, Paspalum conjugatum,* 16.VI.1930 (Saki 63, 65) (topotypic specimens of *H. paumalui*); 3 , Kipapa, 280 m, wind traps, 8.VIII-1.XI.1935, W. Carter (Saki 1091) (1♀:paratype of *H. paumalui*); 1♀(bra.), Kunia, 240 m, dried flowers of pineapple, 19.VI.1940 (Saki 1545); 49♀♀, Blow Hole Beach, grasses (*Dactyloctenium aegyptium, Chloris inflata, Sporobolus virginicus, Tricachne insularis, Cenchrus echinatus, Eleusine indica*), 29.III.1944 (Saki 2071-73, 2588, 2591, 2594, 2597-98, 2600); 1♀. Blow Hole Beach, *Scaevola sericea,* 14.V.1944 (Saki 3038); 32♀♀(including some bra.), 7♂♂(bra.), Koko

Head Beach, *Sporobolus virginicus. Cenchrus echinatus, chloris inflata,* 17.IV.1944 (Saki 2601-02, 2604); 3♀♀, 1♂(bra.), Waipio 230 m, flowers of *Santalum ellipticum littorale,* 20.XI.1945 (Saki 1851, 3156); 15♀♀(including some bra.), 4♂♂(bra.), Kaloko, dried seed pods of *Abutilon incanum,* dried balls of *Gossypium sandvicense,* 26.III.1947 (Saki 2186, 2188); 1♀, Barber's Point, *Pluchea odorata* litter, II.1956*; 3♀♀(including 1 bra.), Barber's Point, *Pluchea indica,* dead branches of *Prosopis pallida,* 29.11, 7.IX.1964 (Saki 4193, 4253).

Earlier collections recorded: OAHU: 3♀♀, Paumalu, 150 m, *Emilia javanica* (previously misdetermined as *E. sagittata*), 25.VIII.1930, Sakimura (Moulton No. 5399); 2♀♀, Kipapa, 280 m, wind traps, 1935, W. Carter (Moulton No. 5399) (both are type series of *H. paumalui*) (Moulton 1937).

Discussion: G. acuticornis is widespread from St. Croix and Barbados in West Indies to Queensland, New Caledonia, West Malaysia and South India. In Hawaii, the first specimen was collected in 1930, and Moulton (1937) described it as *Hoplothrips paumalui.* This generic misplacement had been known for many years but its rectification has been delayed until now. The Hawaiian specimens were compared with the type in the USNM Collection.

In Hawaii, this species has been collected only from Oahu during the past 47 years. Yet it is not a rare thrips. It was often collected in littoral habitats, particularly among grasses on sandy beaches. Strangely, however, no specimens were obtained from the extensive grass samples collected inland. This species was also occasionally collected on various non-grass hosts or within dried seed pods or fruits in inland areas as well as in littoral habitats. Some of those caught are believed to have been transients. In the other regions, this species also has been often collected from grasses as well as dead twigs.

Nesothrips brevicollis (Bagnall) (Figs. 3p-r, 4j-m).

Oedemothrips (?) *brevicollis* Bagnall, 1914:29.
Nesothrips brevicollis: Mound, 1968:140; 1974b:162, figs.
Coenurothrips minor Bagnall, 1921:287.
Neosmerinthothrips formosensis Priesner, 1935:368.
Neosmerinthothrips formosensis karnyi Priesner, 1935:369.

Diagnosis: This species was described by Bagnall (1914) and Priesner (1935) as a brachypterous ♀, and by Bagnall (1921) as a macropterous ♀. The male has been known but never described. Mound (1947b) reviewed and illustrated this species. A brief diagnosis, with description of the male and supplemental illustrations, is as follows: Dark grayish brown to blackish species, abdomen darker, antennal I-III yellowish or brownish yellow, all femora brown with gray-wash along only outer margin, wing fumate, major setae dark, pointed at apex, sculpture weak, 1.7-2.0(♀) and 1.5-1.9(♂) mm long, only macropterous ♀♀ and macropterous-oedymerous ♂♂ seen in Hawaii; head (Mound 1974b:fig. 40) 0.9-1.0(♀) and 1.0-1.1(♂) times as long as wide, strongly narrowed at base, maxillary stylets in broad V, reaching about a half height of occiput; ocellar setae 0.2-0.3 times as long as

head (33-54 μ long), on or just behind a line joining hind margins of posterior ocelli (none seen in Hawaii before the line), postocular setae about twice as long as ocellar setae; antenna (Fig. 4k) 2.1-2.3 times as long as head, III about 2.2 times as long as wide, IV with 4 sense cones; pronotum (Figs. 3p, r) 2/3 (♀) as long as and subequal (♂) to head, anteromarginal setae reduced, epimeral setae much longer than 3 other setae in♀; praepectus present, mesopraesternum complete; fore tarsus armed only in ♂(Fig. 4m), forewing short, reaching only abdominal V or VI (♀) and IV'V (♂), 510-810 μ (♀) and 450-600 μ (♂) long, subbasal setae all on a single line, double fringes 3-8 (♀) and 1-4 (♂); pelta (Mound 1974b:fig. 43) in hat-shape, reticulate; tube (Fig. 4j) 1.9-2.1 (♀♀) times as long as wide at base, slightly shorter or as long as head, weakly constricted at apex; tergite IX (Fig. 4j) with seta i about 1/2 as long as tube and 3/4 as long as seta ii, iii longer than ii.

Material studied: OAHU: 1♀, Barber's Point, *Prosopis pallida* litter, 24.III.1955 (Saki 3782); 20♀♀, Palikea, 1030 m, *Phytolacca sandwicensis, Pipturus albidus, Broussaisia arguta arguta, Neraudia melastomaefolia parvifolia, Bidens* sp. (all in flowers of; believed to be transients), dead branch beatings, 11.IX.1955 (Saki 3850-55, 3858); 1♀, no specific locality, mantid egg mass, 15.XII.1955, E. J. Ford (USNM 56-1889, at Washington); 14♀♀, 8♂♂, Barber's Point, *Pluchea odorata* litter, I-IV.1956*; 1♀, Kipapa, 330 m, grass beatings, 19.III.1957 (Saki 4016); 8♀♀, 5♂♂, Barber's Point, *P. odorata* litter, I.1959,I-II.1960*; 2♀♀, Manoa, *Cyperus rotundus,* partly dried, 7.II.1961 (Saki 4121); 1♀, Kuliouou, dead twigs, I.1962, C. T. Schmidt (Saki 4138); 1♀, St. Louis Height, 230 m, *Morus nigra* fruit, I.1962 (Saki 4139); 1♂, Kipapa, 340 m, pineapple, within dried fruit, 20.X.1962 (Saki 4157); 34♀♀, Barber's Point, *Pluchea odorata* and *P. indica,* foliage, 29.II.1964 (Saki 4193-94); 2♀♀, Barber's Point, dead branch beatings, 7.IX.1964 (Saki 4253); 1♀, St. Louis Height, 230 m, dead branch beatings, 13.IX.1964 (Saki 4268); 1♂, Barber's Point, in hollow twig, 4.II.1965, C. J. Davis*; 1♀, Waipio, 260 m, pineapple flowers, 11.II.1965 (Saki 4582); 1♀, Kahuku, rose flowers, 27.X.1966 (Saki 4677); 98♀♀, 48♂♂, Waipio, 160 m, *Desmanthus virgatus, Sida* spp., all believed to be transients, 27.XI.1966 (Saki 4706, 4709-10); 2♀♀, 1♂, St. Louis Height, 230 m, *Morus nigra* flowers, VI, XII.1967 (Saki 4751, 4757); 1♀, Barber's Point, *Desmanthus virgatus,* 16.XII.1969, F. Andre (Saki 4819); 1♀, 1♂, Kaloko, beach, *Cynodon dactylon maritimus,* 10.X.1970 (Saki 4856); 1♀, St. Louis Height, 330 m, *Acacia koa,* 19.VIII.1974 (Saki 4928); 2♀♀, Koko Head, 90 m, *Prosopis pallida* litter, 30.IV.1975*.

HAWAII: 1♂, Kapoho, beach, *Pluchea odorata,* 2.I.1966 (Saki 4606); 1♀, Kalapana, 16 m, *Metrosideros collina polymorpha,* 27.X.1972, W. C. Gagne (Saki 5025).

Earlier collections recorded: OAHU: 10♀♀, 8♂♂, Pupukea, Barber's Point, *Leucaena leucocephala, Desmanthus virgatus,* 16.XII.1969, F. Andre (Mound 1974b).

Discussion: this is another species which is widespread in the Indian and Pacific Oceans, being known from Reunion, Mauritius, Rodrigues, South India, Java, Taiwan, Loochoo, and North Queensland (Sakimura 1978).

Records of *Neosmerinthothrips formosensis* Priesner and var. *karnyi* Priesner from Fiji (Moulton 1944:307) are based on misidentifications (Sakimura 1978). In Hawaii, the first collection was made as early as 1955.

N. brevicollis, a rather common thrips in Hawaii, thrives among leaf litter in the dry lowlands, such as the coral plain at Barber's Point, but not in the forested highlands. At the onset of drought in its habitats it begins to roam among the surrounding trees and shrubs or even to take flight. A swarm found at the summit of Mt. Palikea in September apparently was blown up by convection currents from the bottom of the precipitous pali in the dry Nanakuli Valley or Lualualei Basin. Another swarm seen on a small brushy area within an old pineapple planting in Waipio in November probably originated from the surrounding pineapple trash. It is interesting to note that no brachypterous specimens have been collected in Hawaii. While the species is common on Oahu, only a few have been collected on Hawaii and none yet on the other islands.

Nesothrips oahuensis Kirkaldy (Figs. 4a-i, 5i).

Nesothrips oahuensis Kirkaldy, 1907:103; Zimmerman, 1948:434; Mound, 1968:141; Mound, 1974b:167, fig.

Oedemothrips laticeps Bagnall, 1910:680, figs.; Moulton, 1937:412; Sakimura and Krauss, 1944:119.

Nesothrips hawaiiensis, lapsus for *oahuensis* Kirkaldy: Bianchi, 1944:31, figs.; 1945b:279.

Diagnosis: The species was fully described by Bagnall (1910) and Bianchi (1944) who found Bagnall's species conspecific with Kirkaldy's species, and was illustrated by them and by Mound (1974b). However, further clarifications are still in need, and some of the illustrations (Bianchi 1944) are in need of modification. A brief diagnosis, with supplemental descriptions and amended illustrations, is as follows: Apterous, dark grayish brown to blackish species, fore tibia and extreme base of antennal III light brown, major setae dark and pointed at apex, sculpture weak, 2.3-2.6(♀) and 1.9-2.5(♂) mm long; head (Fig. 4a) about 1.0 (♀) and 1.1 (♂) times as long as wide, front distinctly produced, cheek slightly arched and gradually narrowed toward base, eye considerably distended posteriad on venter; maxillary stylets in broad V, reaching about a half height of occiput; postocular seta about 1/2 as long as head, ocellar seta about 1/2 as long as postocular seta; antenna (Fig. 4c) 2.2-2.4 times as long as head in both sexes, III 2.4-2.7 times as long as wide, IV with 4 sense cones; pronotum (Fig. 4a) 0.8-0.9( ), about 0.7 (gynaecoid ♂), and about 1.1 (oedymerous ♂, Fig. 4b) times as long as head, anteromarginal and anteroangular setae reduced, very thin, ranging from subminute to 40 μ long, epimeral seta very small, posteroangular seta much larger, 0.5-0.6 times as long as pronotum in both sexes; fore femur 0.9-1.0( ), about 0.9 (gynaecoid) and about 1.5 (oedymerous ♂, Fig. 5i) times as long as head; oedymerous with subbasal bend of inner margin as conspicuous as in *Rhaebothrips* spp.; fore tarsal tooth in ♂ only, much larger in oedymerous ♂; in thoracic sterna (Fig. 4d)

praepectus present, meso- and metasterna not fused with each other, mesopraesternum absent; pelta (Figs. 4g, h, i) very broad and flattened, transversely reticulate, a dark transverse line dividing into fore and hind sections, width of the fore section variable as illustrated, a pair each of minute setae and pores; lateral and sublateral setae of abdominal tergites VI-VII considerably larger than those of all the other tergites; tube (Fig. 4f) stout, 1.5-1.6(♀) and 1.7-1.9(♂, Fig. 4e) times as long as wide at base, about 0.6(♂) and 0.7(♀) times as long as head, practically straight-sided; tergite IX (Fig. 4f) with setae i and iii (counting from meson) subequal in length, 0.6-0.8 times as long as tube, seta ii in both sexes reduced to very short minor seta, 21-31(♀) and 13-25(♂) μ long, rarely developed on one side only in anomaly.

Material studied: OAHU: 1♀, 1♂, Puu Hapapa, 960 m, on ferns, VI.1910, Kuhns*, 11♀♀, 9♂♂, Mauna Kapu and Palikea, 930-1000 m, *Urea sandvicensis, Broussaisia arguta arguta, Dubautia plantaginea,* general beatings, 30.V, 6.VI.1947 (Saki 2218, 2237-39, 2254, 2256); 5♀♀, 1♂, Mt. Kaala, 670 m, dead branch beatings, 22.V.1949 (Saki 3634); 2♀♀, Mt. Tantalus, 500-670 m, dead branch beatings, grass sweepings, 9.XII.1951, 1.IX.1952 (Saki 3674, 3723); 1♀, Palikea, 1030 m, dead branch beatings, 11.IX.1955 (Saki 3857); 1♀, 2♂♂, Palikea, 1030 m, on person, 15.VI.1957*.

Earlier collections recorded: OAHU: 1♂, Waianae Mountains, 670-1000 m, II.1896 (Perkins 553); 2♀♀, 1♂. Mountains near Honolulu, 670-1000 m, VII.1900 (Perkins 667, 789); 1♂, Konahuanui Ridge, ?1030 m, XII.1900, Perkins; (these form the syntype series of *Oedemothrips laticeps*) (Bagnall 1910; Mound 1974B); 1♂, without data, possibly from Oahu (Perkins 489 (syntype of *O. laticeps*) (Mound 1974b); 1♀, 1♂, Tantalus, 430 m, probably on flowers, 12.VIII.1906, O. H. Swezey* (holotype and allotype of *Nesothrips oahuensis*) (Kirkaldy 1907; Bianchi 1944); 1♀, Mt. Kaala, ?1340 m, *Carex wahuensis wahuensis* (=*oahuensis*), sweepings, 31.IV.1935, H. S. Au (Moulton No. 5398) (Moulton 1937); 1♂, Palikea, ?1030 m, beatings, 2.XI.1936, E. C. Zimmerman* (Bianchi 1944).

MOLOKAI: 1♀, rim of Waikolu Valley, 1170 m, beatings, 11.X.1943, N. L. H. Krauss (Saki No. 1318) (Bianchi 1944; Sakimura and Krauss 1944).

LANAI: 1♀, without specific locality, 670 m, I.1894 (Perkins 91) (syntype of *O. laticeps*) (Mound 1974b).

Discussion: N. oahuensis is probably endemic to Hawaii. This is the type species of the genus *Nesothrips* Kirkaldy, which now includes 13 other congeners, primarily from various areas within the Pacific basin (Mound 1974b:158). To date, *N. oahuensis* has been collected only in Hawaii.

This species is a fairly common thrips, becoming sporadically abundant. Since it was first collected in 1896, fair numbers have been collected from Oahu, particularly in the Waianae Range, and on Molokai, and Lanai. Its preferred habitat seems to be dead twigs in the wet highland areas.

Rhaebothrips lativentris Karny.

Rhaebothrips lativentris Karny, 1913:129, fig.; Priesner, 1935:370; Sakimura, 1971:393, figs.; Ananthakrishnan, 1973:127, figs.; Mound, 1974a:91, figs.; 1974b:174.

Rhaebothrips major: Bianchi, 1945b:280, figs.; 1953:108; Zimmerman, 1948:446, figs. (Misidentification of *R. lativentris*).
Cryptothrips claripennis Hood, 1919:90.
Cryptothrips seychellensis Bagnall, 1921:274, figs.
Cryptothrips difficilis Bagnall, 1921:276, figs.
Cryptothrips magnus Moulton, 1928b:299, fig.
Gynaikothrips yuasai Moulton, 1928c:315, fig.
Machatothrips ipomoeae Ishida, 1932:12, figs.
Rhaebothrips fuscus Moulton, 1942:15.
Bolothrips australiensis Moulton, 1968:118.

Diagnosis: This species has been described at least 10 times, and redundantly illustrated. For resident students, the descriptions and illustrations by Bianchi (1945b) and Sakimura (1971) are readily available. Mound (1974a, 1974b) recently reviewed the species. Brief diagnosis is as follows: Dark grayish brown species, fore tibia light brown, antennal III-V brownish yellow with V distally dark grayish brown, wing weakly fumate, major setae brownish yellow to grayish brown, all slightly blunt at apex, 2.3-3.5 mm long, highly polymorphic; head about 1.5 times as long as wide, cheek nearly parallel-sided but roundly narrowed subbasally, with several subminute setae; maxillary stylets (Mound 1974a:fig. 50) in long V, reaching slightly behind postocular setae; postocular seta about 0.4 times as long as head, ocellar seta about 1/2 as long as postocular seta, about on the same level as hind margins of posterior ocelli; antenna about 2.0 times as long as head, III about 3.8 (♀ and oedymerous ♂) and 3.5 (gynaecoid ♂) times as long as wide, IV with 4 sense cones; pronotum about 0.5 (♀ and gynaecoid ♂) and 0.6 (oedymerous ♂) times as long as head; all setae long (longest 0.7-0.8 as long as pronotum) except anteromarginal (0.2-0.3 times as long as pronotum); praepectus present, mesopraesternum slightly degenerated; fore femur in ♂ incrassate and angulate along inner margin subbasally, particularly pronounced in oedymerous ♂, fore tarsal tooth in ♂ only; double fringes of fore wing 13-21; pelta in large hat-shape, totally reticulate; tube about 0.9 times as long as head, about 2.7 (gynaecoid ♂) and 3.0 (all other forms) times as long as wide at base, practically straight-sided, with several minute setae on sides; tergite IX with 3 major setae all slightly shorter than tube, terminal setae slightly shorter than setae of tergite IX.

Material studied: (The majority were previously recorded in Bianchi 1945 and Sakimura 1971) (m: macropterous, b: brachypterous, o: oedymerous, g: gynaecoid).

KAUAI: 1♀m, Poipu, beach, grass sweepings, III.1956 (Saki 3934).

OAHU: 1♀m, Makiki, on grass, 24.VIII.1943, J. S. Rosa*; 1♀b, Manoa, 170 m, on person, I.1944*; 1om, Kunia, wind trap, II.1944 (Saki 1649); 9♀♀m, 1♀b, 4♂♂mo, 2♂♂mg, 1♂bo, Makiki, from colony in hollow stem of *Merremia tuberosa*, from colony in hollow petiole of dried *Carica papaya*, in dried pod of *Cajanus cajan*, from colony in hollow stem of *Carica papaya*, III,IV.1944, Bianchi, F. X. Williams, O. H. Swezey*; 1♀m, Konahuanui, 1030 m, grass, V.1944 (Saki 1648); 1♀m, Kaalaea, beach, grass, XII.1944 (Saki 1650); 15♀♀m. 7♂♂mg, Manoa, on *Morus nigra* fruits, II.1945 (Saki

1742); 2♀♀m, 1♂mg, Palolo, 210 m, Mt. Olympus, 700 m, on car, on grass, III,VI.1945 (Saki 3059F, 3088); 2♀♀m, Manoa, on *Morus nigra* fruits, III.1947 (Saki 3258); 1♂bo, Puu Kaua, 500 m, dead twigs, II.1950 (Saki 3653); 5♀♀b, 5♂♂b, Kailua, among clods of plowed soil, II.1953*; 4♀♀b, 1♀m, 3♂♂bg, Manoa, St. Louis Height, 430 m, on plant debris, leaf litter, III.1953, IX.1954 (Saki 3727, 3747); 3♀♀m, 2♂♂mg, eggs, Waimanalo, in dried seed pods of *Leucaena leucocephala,* II.1955, M. Tamashiro (Saki 3767); 4♀♀b, 1♂mg, 1♂bo, Barber's Point, *Pluchea odorata,* litter, XII.1955, III.1956, I.1959*; 4♀♀b, 1♂bo, Coconut Island, in seed pods of *Leucaena leucocephala,* XII. 1959, C. J. Davis*; 1♀m, 1♀b, 1♂mo, 1♂bg, Barber's Point, *P. odorata* litter, I,II, XI.1960*; 2♀♀b, 3 larvae, Barber's Point, beating *Prosopis pallida,* in hollow twigs, I, II.1965, Bianchi and Davis*; 3♀♀b, 2♂♂bg, Koko *Head, 90 m, Tribulus terrestris,* II.1966, Davis*; 10♀♀m, 5♀♀b, 3♂♂mo, 2♂♂mg, 10♂♂bo, 2♂♂bg, Waipio, 170 m, beating *Desmanthus virgatus, Sida* spp., *Chloris* sp., *Clitoria ternatea* in a small shrubby area within an old pineapple planting, XI.1966 (Saki 4706, 4709-12); 3♀♀b, 5 larvae, Koko Crater, 90 m, *Prosopis pallida* litter, IV.1975*.

LANAI: 1♀m, Manele, 430 m, grass sweepings, III.1961 (Saki 4130).

HAWAII: 1♀b, Kohala, 130 m, in dried pod of *Leucaena leucocephala,* VIII.1964*; 1♀mo, Kalapana, 17 m, on *Metrosideros collina polymorpha,* X.1972, W. C. Gagne (Saki 5025).

Discussion: Among the six adventive species known in Hawaii, *R. lativentris* is most extensively spread, particularly in the Western Pacific region. Its latest known distribution includes Malaya, Java, Philippines, Taiwan, Southern Japan, Saipan, Guam, Yap, Truk, Ponape, New Guinea, Northern Queensland, the Solomon Islands, Wake, and Samoa. In Hawaii, this species was first collected in 1943. During 1944 and 1945, it was extremely abundant, but gradually subsided thereafter. At the present time, however, it may still be collected without great difficulty in its preferred habitats. Collections have been made from Kauai, Oahu, Lanai, and Hawaii.

R. lativentris breeds among leaf litter or in the hollows of dried stems, twigs, seed pods and fruits, in the lowlands, especially in dry forest areas. Some specimens collected in wet highland areas are believed to have been transients. As shown in the collection data, the diversity and frequency of the polymorphic forms collected are particularly notable. Winged forms of both sexes and both oedymerous and gynaecoid forms of both macropterous or brachypterous males, have been seen in Hawaii.

Scotothrips claripennis (Moulton) (Figs. 5a-d).

Dichaetothrips claripennis Moulton, 1934:503; Zimmerman, 1948:447; Stannard, 1957:166, fig.
Scotothrips claripennis: Mound, 1974b:177.
Gastrothrips trinidadensis Hood, 1935:168.
Nesothrips indicus Ananthakrishnan, 1968:967, figs.
Nesothrips diversus Ananthakrishnan, 1972:434, figs.

Diagnosis: The species was described by Moulton (1934), Hood (1935), and Ananthakrishnan (1968, 1972). Some of the earlier illustrations are clarified and supplemented here. Brief diagnosis is as follows: Dark grayish brown to blackish species, head and distal segments of abdomen particularly proximal 3/4 of tube darker, fore tibia yellow, antennal III-IV largely brownish yellow, wing clear, major setae pale and slightly blunt at apex; reticulation moderately conspicuous, pronotum and mesal portion of head practically smooth; 3.1-3.5 (♀) and 2.5-2.6 (♂) mm long; only macropterous ♀♀ and macropterous-gynaecoid ♂♂ seen in Hawaii; head (Fig. 5a) about 1.2 times as long as wide in both sexes, cheek slightly arched and considerably narrowed toward base, bearing several subminute setae; maxillary stylets in long V, reaching the level of postocular setae; long postocular seta about 1/3 as long as head, weak postocellar seta about 1/3 as long as postocular seta, anteocellar seta minute; antenna (Fig. 5d) about 1.8 times as long as head, III 2.5-2.6 times as long as wide, IV with 4 sense cones; pronotum (Fig. 5a) 0.5-0.6 times as long as head in both sexes, posteroangular and epimeral setae subequal in length, about 0.6 times as long as pronotum, both anterior setae subequal in length, about 1/2 as long as posteroangular seta, midlateral seta somewhat longer; praepectus present, mesopraesternum in flat boat-shape with a prominent hump amid; both sexes with fore tarsal tooth, large and sharply pointed; wing with 16 to 20 double fringes; pelta (Fig. 5c) in large hat-shape, totally reticulated; tube (Fig. 5b) slender, straight-sided and gradually tapered, about 2.8 (♀) and about 2.6 (♂) times as long as wide at base, about 0.9 times as long as head in both sexes, bearing several subminute setae; tergite IX (Fig. 5b) with 3 major setae subequal in length and about as long as tube, terminal setae about 0.8 (♀) and 0.9 (♂) as long as tube.

Material studied: OAHU: 1♀, Mt. Olympus, 770 m, ?1937, O. H. Swezey*; 3♀♀, 2♂♂, Makiki, in hollow petiole of dried *Carica papaya* leaf, colony in hollow stem of dried *Cajanus cajan,* on person, 13.X.1944, 28.I, 7.II, III.1945, F. X. Williams, Bianchi, Swezey*; 1♀, 1♂, McKinley High School, Honolulu, *Samanea saman,* IV.1946*; 1♀, Manoa, on window, XII. 1954, Marian Adachi (Saki 3764); 2♀♀, Kuliouou, dead twigs, I.1962, C. T. Schmidt (Saki 4138).

Earlier collections recorded: OAHU: 1♀, Makiki, on table, 5.II.1930, Williams (Moulton No. 3907) (holotype) (Moulton 1934); 1♀, McKinley High School, Honolulu, *Samanea Saman,* IV.1946, Bianchi (Mound 1974b).

Discussion: S. claripennis is another species widely distributed in the West Indies and the Indian Ocean, being known from Mexico, Jamaica, Trinidad, Bahamas, Mozambique, South Africa (Natal), and South India. In Hawaii, this species, which has been known since 1930, is a rare thrips, and only a few specimens have been collected from Oahu. It is a lowland species, and apparently breeds within the hollows of dead twigs or possibly in dried fruits.

Species Excluded from Idolothripinae

Apterygothrips remotus (Bianchi), new combination (Figs. 5e-h).

Pseudocryptothrips remotus Bianchi, 1947:40, figs.

This species, which is probably endemic in Hawaii, has been misplaced in *Pseudocryptothrips* Priesner which belongs to the subtribe Allothripina of Idolothripinae. *Apterygothrips* Priesner belongs to the tribe Haplothripini of Phlaeothripinae, and its maxillary stylets are fine wire-like. The earlier description (Bianchi 1947) is rectified or supplemented as follows:

Female (Apterous): Body 2030-2100 (range among 3♀♀; all measurements in microns; unless otherwise stated denotes length only, w. = width); all major setae pointed at apex, pale brown in color; practically no sculpture on integument except few subbasal scalloping striae on abdominal tergite IX and tube. Head (Fig. 5h) 190-203, w. 110-120, 1.6-1.7 times as long as wide; basal collar thickened; eye normal for the genus, facets not reduced, fine and regular in size; maxillary stylets fine wire-like, retracted in broad U-shape, broad maxillary bridge associated. Antenna 290-316, 1.5-1.6 times as long as head; shape of segments normal for the genus; VI truncate at apex, VII with broad and very short pedicel, apex truncate, VIII not constricted at base, broadly joining VII; III with one small sense cone outside, sense cones on other segments as illustrated earlier (Bianchi 1947:fig. F). Pronotum 136-140, w. excluding coxae 180-193; anteromarginal and midlaterial setae minute, other major setae moderately long; praepectus large, mesonotum with all setae minute, prospinasternum absent, mesopraesternum with a small triangular lobe at each lateral corner; fore legs normal for the genus, femur 141-143, much shorter than head, tibia and tarsus combined (Fig. 5g) 146-148, about subequal to femur, tarsus with tiny (8-10), obliquely forward-directed, recurved tooth, arising from inner apex of tarsomere, as in *Karnyothrips,* hamus tarsi ventrad, the earlier illustration (Bianchi 1947:fig. C) incomplete; hind tibia 134-142. Abdomen 1380-1460; pelta (Fig. 5f) devoid of any sculpture, large median sub-elliptic lobe with a pair of small triangular detachments at sides; lateral setae of tergites much shorter than sublateral setae on II-V, but subequal or longer on VI-VIII. Tube (Fig. 5e) 94-104, w. 57-59 at base and 30-32 at apex, 1.6-1.8 times as long as wide at base, 0.5 times as long as head; tergite IX (Fig. 5e) with seta i (counting from meson) 88-101, ii 85-95, iii 93-104, longest terminal seta of tube 107-113, 1.1-1.2 times as long as tube, normal for the genus, the earlier illustration (Bianchi 1947:fig. E) incomplete.

Male: Unknown.

Material studied: MAUI: 3♀♀(holo- and paratypes), Mt. Haleakala, crater rim, 3240 m, resting on a *Dubautia* sp., 25.IV.1945, E. C. Zimmerman*.

Discussion: A. remotus is nearest to *A. flavus* Faure, 1940. Both species differ similarly from all the other eight congeners by having antennal segment III with single sense cone, and pronotum with minute anteromarginal and midlateral setae. *A. remotus* is a dark species with elongate head and all the major setae acute at apex. In contrast, *A. flavus* is

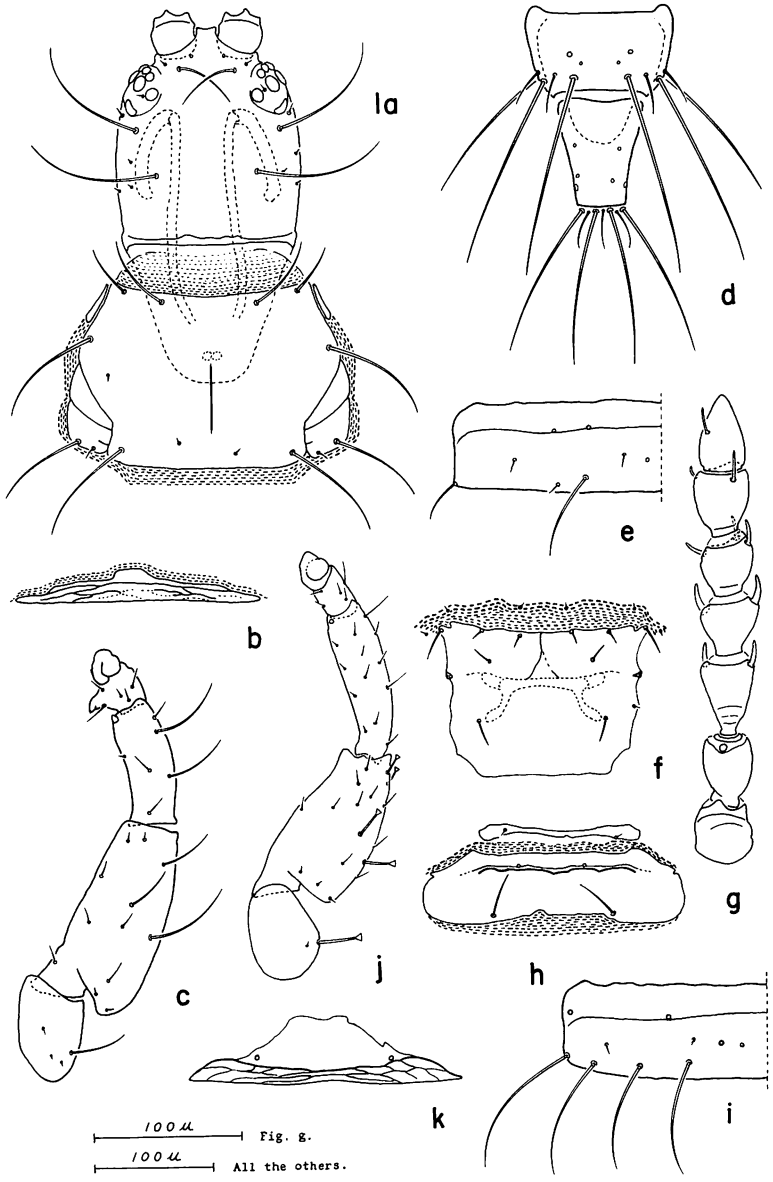

FIG. 1. a-i. *Allopisothrips alakaiensis,* apterous ♂, Holotype: a, head and pronotum; b, pelta; c, fore leg; d, tergites IX-X; e, left half of sternite IV; f, meso- and metasterna; g, left antenna, no setae shown; h, meso- and metanota; i, left half of tergite IV. FIG. 1. j-k. *Allothrips brasilianus,* apterous ♀: j, fore leg; k, pelta. (del. KS).

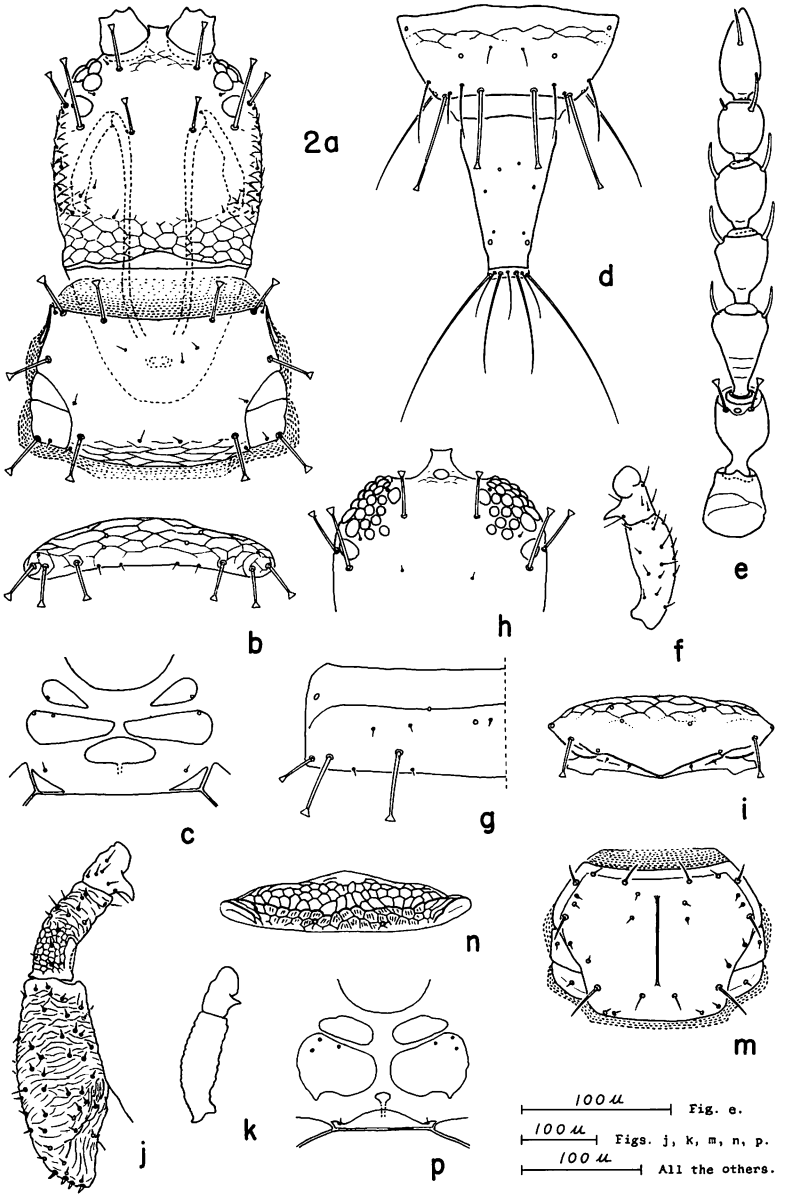

FIG. 2. a-i. *Allothrips brasilianus:* a-g, apterous: a, head and pronotum (♀); b, mesonotum ( ); c, thoracic sterna (♀); d, tergites IX-X (♀); e, left antenna (♀), no setae shown except an expanded pair on II; f, fore tibia and tarsus (oedymerous♂); g, left half of tergite IV (♀); h-i, brachypterous; h, apical portion of head (♀); l, mesonotum (♀). FIG. 2. j-p. *Dermothrips hawaiiensis,* apterous: j, fore leg (oedymerous♂); k, fore tibia and tarsus (gynaecoid), no sculpture and no setae shown; m, pronotum (oedymerous♂), no sculpture shown; n, pelta (♀); p, thoracic sterna (♀), no sculpture shown. (del. KS).

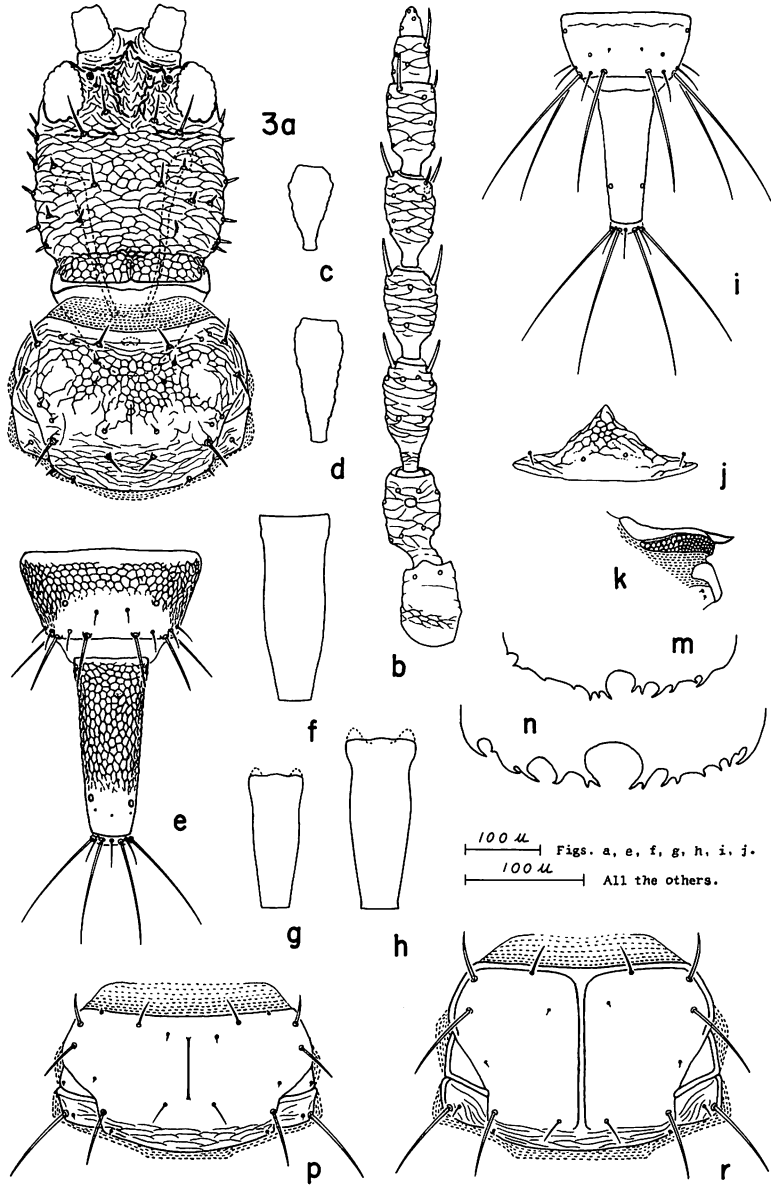

FIG. 3. a-h. *Dermothrips hawaiiensis,* apterous: a, head and pronotum (♀); b, right antenna (♀), no setae but all setal sockets shown; c-d, variation of antennal III, no setae and no sculpture shown: c, gynaecoid♂; d,♀; e, tergites IX-X (♀); f-h, variation of tube, no setae and no sculpture shown: f, ♀; g, gynaecoid ♂; h, oedymerous ♂. FIG. 3. i-n. *Gastrothrips acuticornis:* i, tergites IX-X (♀); j, pelta (♀); k, mesothoracic shoulder spur (oedymerous♂); m, marginal flange of metanotum (gynaecoid♂); n, the same (oedymerous♂). FIG. 3. p-r. *Nesothrips brevicollis:* p, pronotum (♀); r, the same (oedymerous♂). (del. KS).

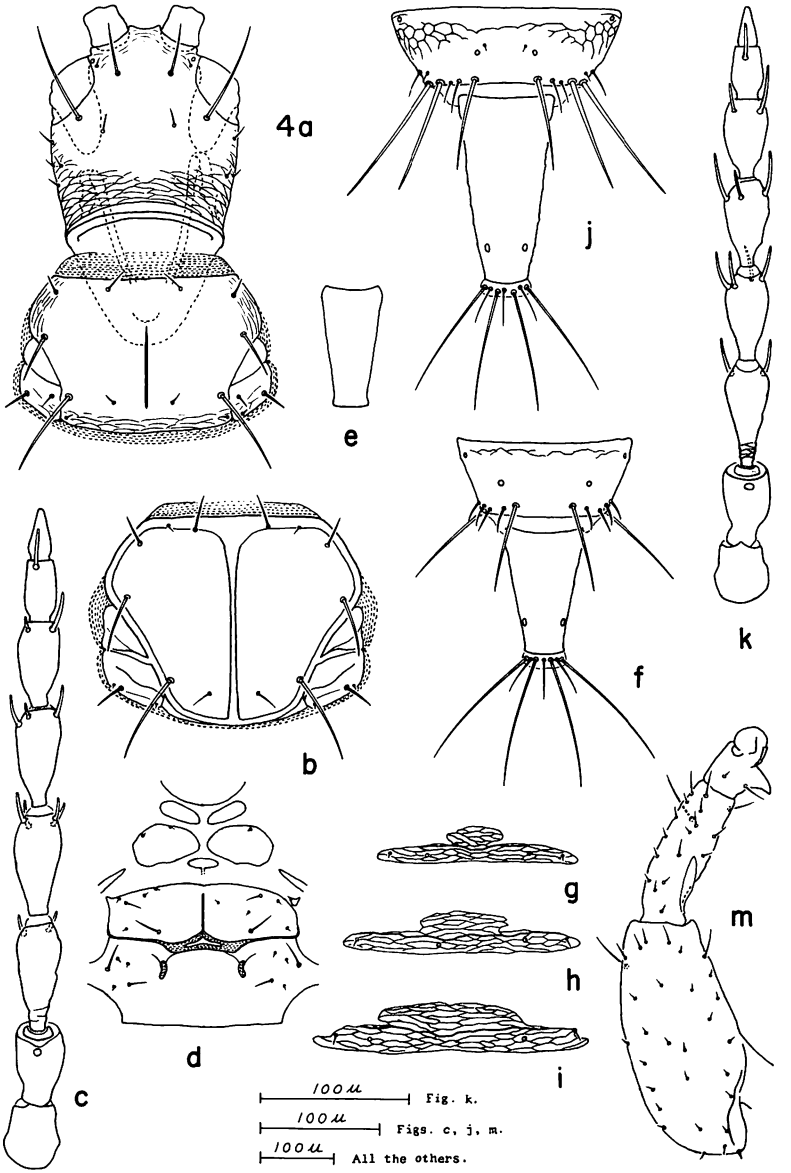

FIG. 4. a-i. *Nesothrips oahuensis,* apterous: a, head and pronotum (♀); b, pronotum (oedymerous♂); c, left antenna (♀), no setae shown; d, thoracic sterna (♀); e, tube (gynaecoid ♂); f, tergites IX-X (♀); g-i, variation of pelta: g, gynaecoid♂; h, ♀ i, ♀. FIG. 4. j-m. *Nesothrips brevicollis:* j, tergites IX-X (♀); k, left antenna (♀), no setae shown; m, fore leg (oedymerous ♂). (del. KS).

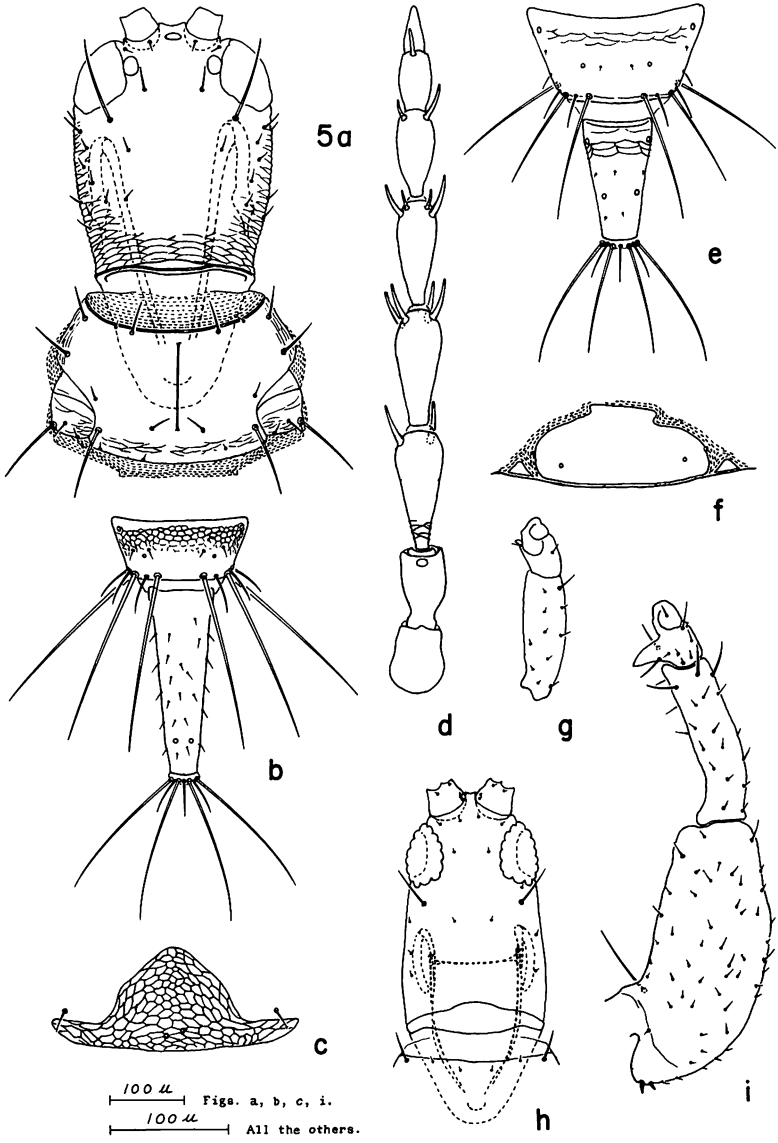

FIG. 5. a-d. *Scotothrips claripennis:* a, head and pronotum (♀); b, tergites IX-X (♀); c. pelta (♀); d, left antenna (♀), no setae shown. FIG. 5. e-h. *Apterygothrips remotus,* apterous: e, tergites IX-X (♀); f, pelta (♀); g, fore tibia and tarsus (♀). FIG. 5. i, *Nesothrips oahuensis,* apterous: fore leg (oedymerous ♂). (del. KS).

a pale species with shorter head and many major setae weakly expanded at apex. In zur Strassen's key (1966) to the species of *Apterygothrips, remotus* comes to the couplet 5b and is rejected.

Among all the nine other congeners, the pelta has been described or was examined by us in five species, namely *A. australis* Pitkin, 1973, *flavus, longiceps* zur Strassen, 1966, *piceatus* zur Strassen, 1966, and *priesneri* zur Strassen, 1966. In every one of these species, the pelta is single-lobed. In *remotus,* however, it is three-lobed. Nevertheless, *remotus* is a typical *Apterygothrips,* with every character conforming with the generic criteria (zur Strassen 1966).

A. fuscus (Moulton) from Rapa Island, which was recently transferred from *Podothrips,* differs from *A. remotus* by its broader head, antennal segment III with 2 sense cones, pronotal posteroangular seta vestigial, and stouter tube.

Abstract

For all the known Hawaiian species of Idolothripinae, synonymies, brief diagnoses, full descriptions or redescriptions, illustrations, and complete collection data are given. A key to the species is provided. Of the 9 species, *Allopisothrips alakaiensis* Sakimura and Bianchi is a new genus and species, and *Gastrothrips acuticornis* (Hood) (=*Hoplothrips paumalui* Moulton) is a new synonymy. *Apterygothrips remotus* (Bianchi) (removed from *Pseudocryptothrips*) is a new combination, and is excluded from the subfamily.

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